

REMARKS

Claims 1-38 are now pending in the application. Minor grammatical amendments have been made to the claims to simply overcome the objections to the claims. The Examiner is respectfully requested to reconsider and withdraw the rejections in view of the amendments and remarks contained herein.

REJECTION UNDER 35 U.S.C. § 112

The Examiner has objected to claims 9, 22 and 34 stating that the term "water spray member" should be replaced with "spray vaporization zone" for consistency of terminology with the specification, not for purposes of narrowing the subject matter claimed. Applicants have amended claims 9, 22 and 34 as suggested by the Examiner. Therefore, reconsideration and withdrawal of this rejection are respectfully requested.

PRIOR ART REJECTION

Claim 1 stand rejected under 35 U.S.C. § 102(a) as being anticipated by Wheeler (U.S. Pat. No. 6,277,509). Claims 1-9, 12, 16-22, and 28-34 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Maru (U.S. Pat. No. 4,352,863) in view of Wheeler '509. Claims 10, 23 and 35 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Maru '863 in view of Wheeler '509 and further in view of Okamoto (U.S. Pat. No. 6,582,841). Claims 11 and 24 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Maru '863 in view of Wheeler '509 and further in view of Keskula et al. (U.S. Pat. No. 6,159,626). Claims 13, 15, 25, 27, 36 and 38 stand

rejected under 35 U.S.C. § 103(a) as being unpatentable over Maru '863 in view of Wheeler '509 and further in view of Davis Jr. et al. (U.S. Pat. No. 4,534,165).

These rejections are respectfully traversed.

At the outset, Applicants note that claims 1, 16, and 28 each recite "a first combustion heater ... operated in a lean state to produce thermal energy as a product of internal combustion ..." Contrary to this, Applicants submit that neither Wheeler '509 or Mura '863 disclose a first combustion heater system operated in a lean condition to produce thermal energy as a product of internal combustion of air and fuel in the form of a first heated exhaust stream that is passed through one of the reformer, shift reactor and preferential oxidation reactor, as claimed. In particular, with regard to Wheeler '509, Applicants note that the combustor 58 directs an exhaust stream to a steam generator 60 to generate steam from a supply water. See, col. 7, lines 38-46. Steam, not exhaust gas from the combustor is directed to the autothermal reformer 64. Moreover, Wheeler '509 is silent as to the stoichiometry of the combustor 58. Likewise, Mura '863 is silent as to the stoichiometry of the combustor. The Examiner cites to col. 3, lines 56-60 as providing a teaching of the stoichiometry of the first and second combustor in Mura '863. The cited portions states that the "burner 26 [] burns a combination of preheated fresh fuel, exhausted fuel gas and compressed oxidant supply gas." While Mura '863 teaches the use of an air-fuel mixture, it provides no teaching or suggestion that of an air-fuel mixture which enables the combustor to operated in a lean condition.

With respect to claims 2, 16 and 28, Applicants note that Mura '863 fails to teach or suggest "a second combustion heater ... operated to produce ... a second heated

exhaust stream that is passed through said at least another of said reformer, said shift reactor, and said preferential oxidation reactor." Mura '863 discloses an optional second burner 41 which burns the anode gas exhausted from the cell to produce a gas at a significantly higher temperature than the cell operating temperature which is then added to exhaust gas streams from the turboexpander 42 and convertor/heat exchanger 37/39. This high temperature gas 21 is directed through exchanger 17 and then discharged to the atmosphere. Thus, exhaust gas from the burner 41 is never passed through a reactor or reformer.


The remaining claims depend directly or indirectly from claims 1, 2, 16 or 28. Applicants submit that the remaining claims are patentable over the cited references for the reasons set forth above. Accordingly, Applicants respectfully request that the Examiner reconsider and withdraw the prior art rejections of the pending claims.

CONCLUSION

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action, and as such, the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

Respectfully submitted,

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